



# **SANsymphony-V Version 9 Storage Virtualization Software Installation and Getting Started Guide**

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## Windows Security Settings Disclosure

In order to allow SANsymphony-V software to function properly and DataCore Servers to communicate, certain Windows operating system settings are automatically changed during the SANsymphony-V software installation. The installation only makes the minimum Windows security changes required. Although security settings are changed, they are never disabled.

**Below are the specific changes performed to the Windows security settings during the installation:**

- Operating system firewall rules are added to allow **DataCore Executive Service**, **DataCore Support Service**, **SANsymphony-V Management Console**, and **DataCore iSCSI** communications. (Specific firewall rules can be viewed in Server Manager>Windows Firewall.)
- A local administrator account **DataCore Executive Service** with logon as service privileges (user name **DcsAdmin**) is created exclusively for services in SANsymphony-V software. **Do not delete the account.**

## TCP and UDP Ports

In order for the software to function properly, some ports must be open:

- **Port 3793** is used by the DataCore Executive Service (Dcsx.exe) to communicate and transfer data between DataCore Servers (locally and in Remote Replications), and to communicate between Management Consoles and DataCore Servers.  
 **Ensure these machines can accommodate traffic between them based on your network configuration and taking into consideration any firewalls.**
- **Port 3793** is used for automatic license activation and to upload **support bundles** to DataCore Customer Support. If port 3793 is unavailable, port 80 can be used for automatic license activation, but not to upload support bundles.  
 **To use these features, an outbound firewall rule may be required.**
- **Port 3260** is used for iSCSI communications. Ensure machines using iSCSI can accommodate traffic between them based on your network configuration.
- **Port 137** (Windows NetBIOS port) is required to resolve hostnames. Windows operating system cannot resolve hostnames when the NetBIOS port is blocked by a firewall; NetBIOS is disabled. This port needs to be open on any DataCore Server or computer running the SANsymphony-V Management Console that uses hostnames (not FQDN) to connect to the server group. Open the port in any necessary firewalls.
- **Ports 161 and 162** are used for SNMP support. Ports will be handled by Windows operating system as part of the Windows SNMP package.

## Pre-Installation Steps

To ensure a smooth installation, please take a few moments to prepare the DataCore Servers that will run SANsymphony™-V storage virtualization software and the hosts that will utilize the virtual storage resources.

### Important Notes:

- Product license keys are not necessary to install and evaluate SANsymphony-V software. However, software activation with valid product license keys is required within 30 days. Failing to activate the software within the trial period will terminate operation when the trial period expires.
  - ⚠ Certain software features are disabled or limited in trial mode.
- SANsymphony-V software (including the server component) should be installed on dedicated servers. Do not install SANsymphony-V server software on Domain Controllers.
- Read the **Release Notes** provided with our software for important information.
- System requirements can be found on the DataCore Web site (<http://www.datacore.com/Software/Products/SANsymphony-V-Prerequisites.aspx>).
- See [Name Resolution](#) for guidance to ensure functioning name resolution within a local server group, between local and remote server groups using replication, and when using a remote SANsymphony-V Management Console.

## Prepare DataCore Servers

- Ensure DataCore Servers meet or exceed [system requirements](#). Install any Microsoft Windows operating system software service packs and updates.
- **Do not enable** the following Microsoft Windows Features or Roles on DataCore Servers running Windows Server 2012 or Windows Server 2012 R2. These features **adversely affect** the fundamental storage operations in SANsymphony-V software:
  - Storage spaces pools with virtual volumes
  - iSCSI Target volumes
- DataCore Server name is limited to 15 ASCII characters. Fully qualified domain name (FQDN) is limited to 64 characters.
- DataCore Servers "broker" all storage resource allocations and paths from hosts (servers utilizing virtual storage) to physical disks. Connect DataCore Servers to hosts and physical storage to the network via FC HBAs, NICs for iSCSI, or a hybrid of both. Only Internet Protocol Version 4 (IPv4) is currently supported for iSCSI targets on DataCore Servers. IP to FC routers that enable IP/iSCSI connectivity to the Fibre Channel and iSCSI storage resources are supported. Ensure storage and hosts are accessible to DataCore Servers.
  - **NICs should be connected with a valid IPv4 address. This must be done prior to software installation or the DataCore iSCSI drivers will not install properly.**
  - In order to achieve high availability, two DataCore Servers with two FC HBAs or NICs are required. This will achieve automatic failover if I/O directed to one path fails when a virtual disk is served to a host with multipathing capabilities.

- An Ethernet connection is required between storage servers. This connection is required for communications between the storage servers such as various messaging, relaying configuration changes, and collecting status information.
- Storage devices, from JBOD enclosures to intelligent storage arrays, are supported. Basic vendor-specific configuration and installation of these storage devices should be performed according to manufacturer instructions. After the physical devices are discovered by SANsymphony-V software, no further device-specific configuration is necessary other than for hardware maintenance or failure correction.
  - ❗ Disks marked as "Removable" in Windows Disk Management **cannot** be used as storage devices.
- DataCore Servers (including Replication partners) and management consoles require functioning name resolution to resolve computer names to IP addresses, for example hosts files or DNS (Domain Name System). To ensure correct communication and data transfer, verify that name resolution exists among all management consoles and DataCore Servers used in local and remote server groups. See [Name Resolution](#) for more information.
- SANsymphony-V software will manage any physical disks that are unpartitioned.
- Physical disks with existing file systems and disk formats (such as Windows, Unix, AIX, Linux, Solaris) can be migrated into the SANsymphony-V architecture without modifying the structure. Access to current disk contents can be maintained during the migration process. Do not alter these disks in any manner. See the SANsymphony-V Help topic **Pass-through Disks** for details.
- If using iSCSI:
  - Ensure Microsoft iSCSI Initiator is enabled on the operating system.
  - If using an iSNS server, attach the iSNS server to the iSCSI SAN and install the iSNS software. Microsoft iSNS Server software can be downloaded from the Download Center on the Microsoft Web site.
- If planning to replicate virtual disks to a remote location:
  - TCP/IP connections are required between local and remote servers. Only IPv4 is currently supported for iSCSI targets on DataCore Servers.
  - The best practice when replicating between sites is to use a network card that is dedicated to replicating virtual disks and not used for other functions such as iSCSI or LAN management. Sharing the network card for various uses may impact replication performance.
- If planning to record performance data on a remote SQL Server:
  - Microsoft SQL Server® 2008/2012 (Standard, Enterprise, Developer, or Express editions) are supported.
  - The SQL Server instance must be created prior to configuring the remote SQL Server in SANsymphony-V software after installation. See the SANsymphony-V Help topic **Recorded Performance** for more information, including additional remote SQL Server requirements.
- All DataCore Servers and hosts should be time-synchronized. We recommend configuring the built-in Windows Internet Time Settings (NTP) to synchronize the time.

## Prepare Hosts

- Hosts (servers which will utilize LUNs served from DataCore Servers) should be connected to DataCore Servers as noted in the previous section.
- If using iSCSI, install an iSCSI initiator on hosts. After SANsymphony-V installation, discover the DataCore Server targets.
- All hosts should be time-synchronized with DataCore Servers. We recommend configuring the built-in Windows Internet Time Settings (NTP) to synchronize the time.
- See the [Technical Bulletins](#) page of the **DataCore Technical Support Web site** for important configuration instructions for hosts.
- If running DataCore MPIO software, read the MPIO release notes for important configuration instructions.

## Name Resolution

IP addresses are used to communicate and transfer data between DataCore Servers (including Replication partners), as well as to communicate and transfer information between DataCore Servers, remote SQL Servers recording performance data, and computers running the SANsymphony-V Management Console. In order to make a network connection using host names, all machines must be able to resolve the host names of DataCore Servers to their IP address.

*This topic addresses name resolution and how it pertains to connecting to a server group, and facilitating communications within a local server group, between local and remote server groups replicating virtual disks, using remote SQL Servers for performance recording, and when using a remote SANsymphony-V Management Console. Also see [Connecting to a Server Group](#) and the SANsymphony-V Help topic **Establishing Server Groups** for more information.*

 **We strongly recommend using host names to connect to DataCore Servers instead of IP addresses. Host names can be resolved to IP addresses regardless of changes to the IP addresses.**

**Numerous name resolution mechanisms and implementations exist. The correct name resolution implementation should be based on your network configuration. Before making any changes based on the information in this topic, consult your IT department for guidance and to ensure compliance with the name resolution implementation for your network configuration.**

## Functioning Name Resolution

A name resolution mechanism must exist to resolve hostnames to IP addresses. For instance, some examples of name resolution mechanisms are Domain Name System (DNS) or Windows HOSTS file.

A fully qualified domain name (FQDN) specifies an exact network location of a network device. For example, given a computer with a local computer name "mycomputer" and a parent domain name "domain.com", the fully qualified domain name is "mycomputer.domain.com".

A host name can be either a computer name or a FQDN.

### Important Notes:

- If a host name (not an FQDN) is used to connect to a server group, then the Windows NetBIOS port 137 used to resolve host names must be open.
- If a host name (not an FQDN) is used in the HOSTS file, then the Windows NetBIOS port 137 used to resolve host names must be open.  
See [Windows Security Settings Disclosure](#) for more information about ports used in SANsymphony-V software.

- A HOSTS file will override DNS and could give incorrect results if IP addresses are changed on the DNS.
- The computer name in a HOSTS file is case sensitive.
- The computer name used in a HOSTS file, should be the same computer name used to connect to a server group. See [Connecting to a Server Group](#) for more information.

## Partnering Within a Server Group

Each server running SANsymphony-V software must be able to resolve the host names of each DataCore Server in the server group to which it belongs.

For instance, to partner DataCore Servers A1 and A2 into the same Server Group A:

- DataCore Server A1 must be able to resolve the host name "A2" to an IP address that A1 can connect to.
- DataCore Server A2 must be able to resolve the host name "A1" to an IP address that A2 can connect to.

Ensure that the DataCore Servers can reach each other. From a command line on the computer running the console, ping each server using the host name and ensure there is a successful reply. For instance, "ping A1" **and** "ping A2". If the ping times out without a reply, check firewall settings to ensure the reply is not being blocked.

## Remote Management via the SANsymphony-V Management Console

The computer running the console must be able to resolve the host names of **each** DataCore Server in the server group to which it is connecting.

For instance, to connect from a SANsymphony-V Management Console running on Machine X to Server Group A consisting of DataCore Servers A1 and A2:

- The console on Machine X must be able to resolve the host name "A1" to an IP address that Machine X can connect to.
- The console on Machine X must be able to resolve the host name "A2" to an IP address that Machine X can connect to.

If the computer running the SANsymphony-V Management Console is "outside" the network of the server group that it is connecting to, then public IP addresses may be required for the computer running the console and each DataCore Server in the server group. In this case, host names must be resolved to the public IP addresses using the appropriate name resolution mechanism. (Editing the HOSTS file might be a possible solution.)

Ensure that the console can reach each DataCore Server. From a command line on the computer running the console, ping each server using the host name and ensure there is a successful reply. For instance, "ping A1" **and** "ping A2". If the ping times out without a reply, check firewall settings to ensure the reply is not being blocked.

## Replication

All servers running SANsymphony-V software in the local and remote server groups involved in virtual disk replication must be able to resolve the host names of all other DataCore Servers in those groups.

For instance, Server Group A consisting of DataCore Servers A1 and A2 which are replicating virtual disks to Server Group B consisting of DataCore Servers B1 and B2 must be able to resolve the following:

DataCore Server A1 must be able to resolve host names "B1" and "B2" to IP addresses that A1 can connect to.

DataCore Server A2 must be able to resolve host names "B1" and "B2" to IP addresses that A2 can connect to.

DataCore Server B1 must be able to resolve host names "A1" and "A2" to IP addresses that B1 can connect to.

DataCore Server B2 must be able to resolve host names "A1" and "A2" to IP addresses that B2 can connect to.

If Server Groups A and B are on different networks, then public IP addresses may be required for all DataCore Servers in both server groups. In this case, host names must be resolved to the public IP addresses using the appropriate name resolution mechanism. (Editing the HOSTS file might be a possible solution.)

Ensure that DataCore Servers in both server groups can reach each other. From a command line on each DataCore Server ping each server in the other server group and ensure there is a successful reply. For instance, from a command line on DataCore Server A1, "ping B1" **and** "ping B2". Repeat for each server. If the ping times out without a reply, check firewall settings to ensure the reply is not being block

## Remote SQL Recording Servers

Each DataCore Server in the local server group must be able to resolve the host name of the remote SQL Server to which it is connecting.

For instance, Server Group A consisting of DataCore Servers A1 and A2 which are recording performance data and sending the data to Remote Recording Server B must be able to resolve the following:

DataCore Server A1 must be able to resolve host name "Remote Recording Server B" to an IP address that A1 can connect to.

DataCore Server A2 must be able to resolve host name "Remote Recording Server B" to an IP address that A2 can connect to.

If the remote SQL recording server is "outside" the network of the server group that it is connecting to, then public IP addresses may be required for the remote SQL recording server and each DataCore Server in the server group. In this case, host names must be resolved to the public IP addresses using the appropriate name resolution mechanism. (Editing the HOSTS file might be a possible solution.)

Ensure that each DataCore Server in the server group can reach the remote SQL recording server. From a command line on each DataCore Server ping the remote SQL recording server and ensure there is a successful reply. For instance, from a command line on DataCore Server A1, "ping Remote Recording Server B". Repeat for each server in the server group. If the ping times out without a reply, check firewall settings to ensure the reply is not being blocked.

# Installing SANsymphony-V Software

This topic includes instructions for installing SANsymphony™-V storage virtualization software, starting the DataCore Servers, and opening the Help to begin your configuration.

The SANsymphony-V software package consists of the following components:

- The **Server Components** consists of the program files used to run the SANsymphony-V virtualization functions. These components are required to be installed on all DataCore Servers.
- The **SANsymphony-V Management Console** component consists of the program files used to run the user interface. The SANsymphony-V Management Console is used to configure, control, and monitor DataCore Servers. This component can be installed on any computer running a supported operating system. *(Not available for installation on servers running the Windows Server Core Installation Option.)*
- The **SANsymphony-V Cmdlets for Windows PowerShell** component provides the ability to perform SANsymphony-V storage management activities through the Windows PowerShell™ command line interface.

**Complete** installations will install all components on a DataCore Server.

**Custom installations** can be performed in which components are selected. The Server component can be installed on a DataCore Server without installing the SANsymphony-V Management Console component. The SANsymphony-V Management Console component can be installed on any computer to remotely configure, manage, and monitor DataCore Servers that have the Server component installed.

These instructions are for new SANsymphony-V installations only. **Do NOT attempt to upgrade from a SANmelody™ 3.x software version, SANsymphony™ 7.x software version, or any other SANsymphony-V software version.**

## Before beginning the installation:

- A product license key is not necessary to install and evaluate SANsymphony-V software. However, software activation with a valid product license key is required within 30 days. Failing to activate the software within the trial period will terminate operation when the trial period expires.
  - ❗ Certain software features are disabled or limited in trial mode.
- Verify that storage servers meet or exceed the [system requirements](#).
- Read the Release Notes.
- Review and perform the [Pre-installation Steps](#) in this guide.
- Review [Windows Security Settings Disclosure](#) in this guide. Port 3793 and port 3260 must be open for the software to function properly. If using firewalls, please ensure these ports are open.

- Be prepared to logon to Windows using the local Administrator account or a local account with installation and administrator privileges and password. The account used (username and password) must be identical for all servers in the server group.

**To install:**

- 1 Log on to Windows using the local Administrator account or a local account with installation and administrator privileges and password.
- 2 Save and close all files, programs, and windows. At the end of the installation, it will be necessary to restart the server to finalize the installation process.
- 3 Select the appropriate step:
  - a For servers running the Windows Server **Core Installation Option**:
    - i Open a command line.
    - ii Navigate to the folder containing the installation package.
    - iii Run **.\SANsymphonyV.exe** to start the installation wizard.
  - b For all other servers:
    - i Run the **SANsymphonyV.exe** file in the installation package to start the installation wizard.
- 4 The License Agreement will appear. To proceed, accept the terms of the license agreement and click **Next**.
- 5 In the **Setup Type** dialog box, choose **Complete** to install all components or **Custom** to select the components and click **Next**.
- 6 In the **Ready to Install the Program** window, click **Install** to start installing the program files.
- 7 The installation begins. When you receive the Windows Security Alerts to install DataCore device drivers; select the **Always trust software from DataCore Software Corporation** check box to install the remaining drivers without prompts and click **Install** to continue.  
 If you receive a message that the installation was unable to configure all of the iSCSI ports. Click **OK** to continue. This is due to the NIC not being properly connected with a valid IP address. **After** installation is complete, the DataCore iSCSI Driver can be manually installed. See [Manual Driver Installation](#) for guidance.
- 8 When the files have been installed, the **Set DcsAdmin Password** dialog box will appear. A local administrator account **DataCore Executive Service** with logon as service privileges (user name **DcsAdmin**) will be created exclusively for SANsymphony-V services. **Do not delete the account.**

- a Enter a password and confirm it.  
 **Remember the password**, the same password must be used when installing the software on each DataCore Server in the local SANsymphony-V server group configuration. ***This password must be identical for all servers in the server group.***
  - b Click **Next** to continue.
- 9 To complete the installation, choose to restart the system and click **Finish**.
  - 10 When the server restarts, log on to Windows using the local Administrator account. Please be patient, as it may take some time for your system settings to update with the new information.

### Starting SANsymphony-V software:

 Perform these steps from a server running the **SANsymphony-V Management Console** component.

- 1 Click the **SANsymphony-V desktop shortcut** .
- 2 Refer to [Connecting to a Server Group](#) in this guide to connect to a DataCore Server through the SANsymphony-V Management Console using the local Administrator account or the DcsAdmin account that was created during the installation. ***Use the same account and password for all servers in the server group.***
- 3 After connecting to the management console, open the **SANsymphony-V Help** from the **Ribbon>Home tab**. The Help opens to the **Welcome to SANsymphony™-V Software** topic. (If the machine has no Internet access, open the Local Help from **Start>All programs>DataCore SANsymphony-V>Local Help**.)
- 4 In the right pane of the **Help**, click the link to the **Getting Started** topic which will assist you in performing the initial set-up.

## Connecting to a Server Group

The SANsymphony-V Management Console allows users to establish a TCP session from any computer running the SANsymphony-V Management Console component, which is used to configure and manage DataCore Servers. Once connected to a server in the server group, storage configuration and management can be performed for all servers in the server group from a single console.

❗ See [Name Resolution](#) for *important* information about connecting to a server group, and facilitating communications between local and remote server groups replicating virtual disks, and when using a remote SANsymphony-V Management Console.

## Credentials

Windows® operating system credentials are used to connect to DataCore Servers:

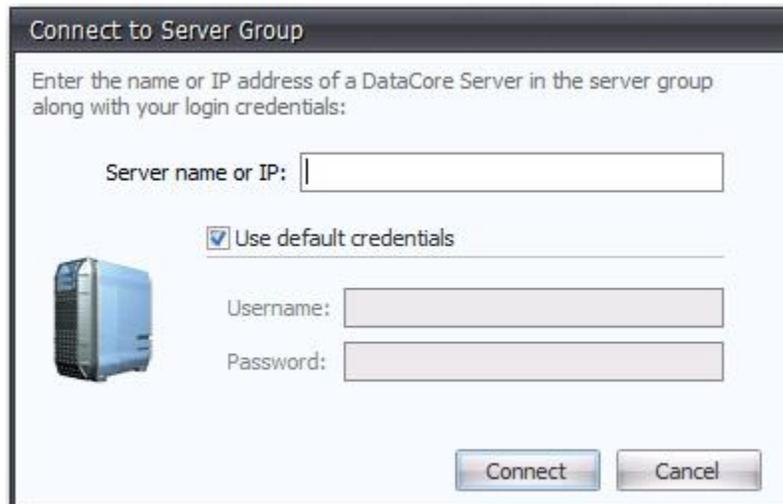
- Credentials can be domain-wide or local (workgroup).
- ***When connecting to a server which is part of a group, user credentials will be authenticated on each server in the group. The same user accounts and passwords (domain or local) must exist on all DataCore Servers in a server group. If using the local Administrator account, passwords must also match on all servers in the group.***
- Users must also be registered in the SANsymphony-V Management Console with user names that are identical to Windows operating system user accounts. See the SANsymphony-V Help topic ***Registering Users and Assigning Roles*** for details.
- Special notes about connecting after installation for the first time:
  - After installation and before users are registered in SANsymphony™-V storage virtualization software, the ***only user accounts*** that can be used to connect to a server group and gain access to the SANsymphony-V Management Console is the ***local Administrator account or the DcsAdmin account that was created during installation. When connecting to a server group for the first time, use The Administrator account. Use the same account and password for all servers in the server group.***
  - During installation, a local server group is automatically created and the server that you connect to is the sole member of that server group. (After connecting to the server group, additional configuration can be performed, such as adding more DataCore Servers to the same server group. See the SANsymphony-V Help topic ***Establishing Server Groups*** for more information.)

## Connecting to a Server Group

Connecting to a server group establishes a TCP session to communicate with the DataCore Executive Service (Dcsx.exe), which provides core management and configuration services for the DataCore Server. When connected, all DataCore Servers in the server group can be accessed from the same console.

**To connect to a server group:**

- 1 When the SANsymphony-V Management Console is opened, the **Connect to Server Group** dialog box opens.



- 2 In the dialog box, enter the name or IP address of the DataCore Server to connect to. This entry defines how communications will occur between servers, through server name or specific IP address.

- If the server name or IP address is not provided, a localhost connection is assumed. So if connecting to the same server you are currently using, the name or IP address is not necessary.
- DataCore Servers (including Replication partners) and computers running the SANsymphony-V Management Console component require functioning name resolution to resolve computer names to IP addresses. To ensure proper communication and data transfer, verify that correct name resolution exists. If using a HOSTS file, the name in the file should be identical to the computer name, including case. See [Name Resolution](#) for more information.

 ***We highly recommend using host names instead of IP addresses. IP addresses can be determined from host names regardless of changes to the IP addresses.***

- 3 To login to the server using the same credentials that were used when logging into Windows, select the **Use default credentials** check box. Otherwise, clear the check box and enter the required authorized credentials. (If credentials are domain-wide, include the domain with the name for example: DOMAIN\user name.)

 ***For a new installation, if connecting to a server group for the first time, use the local Administrator account or the DcsAdmin account that was created during installation. Use the same account for all servers in the server group.***

- 4 Click **Connect**. A message will appear on the dialog box that the management console is attempting to connect to the server. When the connection has been successfully completed the dialog box will close.

[Click here to play video](#) 

## Connection Status

The connection status between the management console and the server is displayed on the right in the **status bar** at the bottom of the management console.

### Status:

- **Connected** - Indicates that there is a connection between the management console and the server.
- **Disconnected** - Indicates that there is no communication between the management console and the server. Try reconnecting to the server again. (The **Connect to Server Group** dialog box can also be opened from the **Ribbon>Common Actions tab** in the management console.)

## Technical Support

Answers to technical questions regarding SANsymphony-V software can be found on the DataCore Technical Support Web page at <http://www.datacore.com/Support.aspx>.

The DataCore Technical Support Web page at <http://datacore.custhelp.com/> provides FAQs, Technical Bulletins, Best Practices, and software PSPs/updates.

[Click here to play video](#) 

## Support Plans

DataCore Software offers support plans and personal assistance for its software products for a nominal fee. To learn about support policies and plans and purchase a support plan, visit [www.datacore.com](http://www.datacore.com) or contact your DataCore Sales representative for more information.

Registered customers with a valid support plan may use our Web support, phone or email for personal assistance. If you have a support plan, you must [register](#) before requesting personal assistance.

***Technical support shall be limited to software products manufactured by DataCore Software Corporation. Technical support of products other than those manufactured by DataCore Software Corporation shall be the sole responsibility of the end-user or installer. Installation of non-qualified software or hardware is at the sole risk of the end-user or installer. See the [DataCore Technical Support Web page](#) for the most current list.***

## Licensing

Current licensing capacity and features for a server group and individual DataCore Servers can be viewed in the **Server Group Details page>License tab**.

To purchase a permanent license or purchase additional [storage capacity or node support](#), [licensed software features or products](#), contact [DataCore Software](#) or your DataCore Solution Provider.

See the SANsymphony-V Help topic ***Activating the License*** to activate new licenses or activate new license capacity or features.

## Manual Driver Installation

SANsymphony-V software will install the DataCore iSCSI drivers as long as the NICs were properly connected with a valid IP address.

If there was a problem with the IP connection during installation, the DataCore iSCSI driver would not be installed and this message would have been received during installation:

""The installation was unable to configure all of the iSCSI ports. You may continue with the installation and manually install the DataCore Software iSCSI driver after the installation has finished. For help on possible causes and how to manually install the DataCore Software iSCSI driver, consult the Installation Guide in the download package.""

 *These instructions are provided for guidance. For detailed instructions on Microsoft Windows features, consult the Windows documentation.*

### To install the DataCore Software iSCSI driver after installation:

- 1 In Windows Device Manager, check **Network adapters** and **DataCore Fibre-Channel Adapters** to determine which NIC needs the driver installed. The NIC will be displayed with a warning icon.
- 2 In Windows, check the properties of the NIC. Ensure that Internet Protocol Version 4 (TCP/IPv4) is enabled and has a valid IPv4 address. **Consult your IT department for guidance.**
- 3 Use Windows Device Manager to install the driver. Right-click the NIC and select **Update Driver Software**. Browse the computer for the driver software which is provided in the SANsymphony installation folder. Default location is **C:\Program Files\DataCore\SANsymphony**.